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ABSTRACT

Designed to assess the economic literacy of high school students in Austria, Germany, and the United States, this research study involved the administration of an economic literacy test and gathering data on attitudes toward economics, on intelligence, and on moral maturity. The main focus of the research was a comparison between 11th and 12th grade students in the United States with those in Germany and Austria. At the time the report was prepared, data from the German students was incomplete. Among the more significant findings of the study was that the achievement of Austrian students in economic literacy was no better or worse than their U.S. peers. A difference in the performance levels between male and female students in both Austria and the United States was noted. A list of four references is included and a number of tables, many containing statistical data, are appended. (DB)

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Economic Literacy in the United States, Germany and Austria - Results of Cross National Studies *

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1. Introduction

"In 1988, it was reported in the United States that there was a problem with economic literacy of the American high school Students (Walstad and Soper, 1988). We do not know if the same is true for the German-speaking countries. The reason is not that high school students in these countries possess a high standard of economic literacy, but rather that the state of economic knowledge among students has never been assessed. To correct this situation, we decided to translate the Test of Economic Literacy (TEL) (Soper and Walstad, 1987) and to administer this German version to students in our countries."

With these words we began our first paper presentation on this problem at the AERA meeting 1989 in San Francisco. In the "first phase" we wanted to examine whether the TEL is suitable as a test for assessing the economic literacy of German-speaking students. In short we firstly reported the translation problems, secondly the results of a questioning of German, Austrian and Swiss University professors as to the content validity of the German version of the TEL, which we call WBT ("Wirtschaftskundlicher Bildung-Test") and, thirdly, the outcomes of a first application of the WBT with some 750 students.

Here it is enough to say that the results of this pilot study motivated us to continue this work. On the basis of an itemanalysis we improved some items with extreme values on difficulty or discrimination scores. We are now applying the revised version on larger samples of Austrian an German students in different levels and branches of our school systems.

Besides assessing the WBT-score we gather data on attitudes to economics, on intelligence, and on moral maturity. We think that these concepts are components of "economic education" in the wider sense of this notion.

Today we would like to present and discuss some results of our investigations concerning the WBT. One of our main interest points is the comparison between the US and our countries with regard to the achievement level of the 11^{th} and the 12^{th} graders. Unfortunately, to date we have not enough data from the German students because of not forseen difficulties with the school boards concerning their readiness to allow the collection of data. But today the school doors are open. Yet the time was too short to have all data collected and computed for this meeting. We are now able to present the results from a sufficiently large sample of Austrian students and we have also the

information about their teachers' judgements of the WBT-items which is important for the evaluation of its content validity.

Before showing the results of the different tested groups we have tested it is necessary to analyze the conditions for the comparison, i.e. the curricular prerequisites under which the data are to interprete. Then we want to draw your attention on the opinions of the teachers about the WBT. We can learn from that whether the measure one obtains from administering the WBT is something which - in the eyes of this important group of experts - relies on a relevant basis of content. Our last point is the presentation of the results we got in testing four different groups of Austrian students and the comparison with their US-American peers whose measures were published by Soper and Walstad in 1987.

2. Economic Education in the USA, Germany and Austria

Comparisons of school achievement always beg to question whether the instrument of measurement is equally appropriate for students from several (school) cultures. The problem of comparing student samples and therefore of 'test fairness' must be discussed on the outset. Only when this is explained the comparative data can be meaningfully interpreted.

2.1. School systemrelated differences

A comparative analysis of the central features of Economic Education provide a first answer as to the fairness of the test. We have attempted this on two levels so far:

1. Comparison of the school systems
2. Comparison of the curricula.

Let us start with the school systems. We have tried to depict the most important features of the three school systems for a comparison. Tables 1a, b, and c show the different structures.

For those who are familiar with the American system it is sufficient to remark only one point of Table 1a for the comparison: Students in classes 11 and 12 attend without major exceptions one school type, the Senior High School. Within this school the

students have usually the choice between many optional subjects, one of which is economics.

The German and Austrian school system is considerably different in this respect. Students in grades 11 and 12/13 attend many types of schools in Austria and Germany. Only the Elementary Schools (grades 1-4) are comprehensive schools in both countries.

German and Austrian students at the age of 10 and then again at the age of 14 (Austria) or 15 (Germany) have to choose which of the school types listed on Table 2 they want to attend. They are not allowed to decide whether or not they will be tought a lot of economics at these schools. The course-content is mandatory (with only very few exceptions).

These differences in the systems of the USA on the one hand and of Austria and Germany on the other "distort" the comparison of the Economic Literacy of the students. The American students have the possibility of choosing 'economics' among many other courses at their comprehensive school. The German and Austrian students must choose between types of schools and this decision is probably in no way influenced by their interest in economics. They are looking at the legitimations they can get at any school and at the role it can play in career planning but they normally don't look at the content and the objectives of the curricula.

For the comparison with US-data we have drawn the major part of our sample from the group of the 17 years old students who were in the last but one or in the last year of their school. (The only major exception is school type No. 4 (Germany); the reasons for the inclusion of that group are not to discuss here for we'll not present data for it.)

It may be of interest to know the approximate percentage of an age-group attending the different schooltypes. The figures we show on Table 3 are somewhat rough estimators - it is very difficult to get valide informations - but they show the quantitative importance especially for the vocational schools.

This may be enough for a first glance at the institutional conditions under which the comparison has to be done. It is hard to say which of the Austrian/German groups is the most similar to the American high school students. May be this is mostly true of our No. 1 - students (at least looking at the formal structure of the education; cf. Table 3) but one must have in mind that our No. 1 - students are, so to say, of the best quality, the brightest ones. With respect to the general level of intellectual competencies the students in the school types No. 3 and 5 would - roughly spoken - be more similar to

American highschool students. But the difference is that they have already made a complete decision of vocational specialization. We will reach a better answer to this question when we look at the time tables and the curricula of our young poeple.

2.2. Time Budget-related differences

In American schools where students usually choose economics in the 11^{th} or 12^{th} classes it cannot be easily grasped which additional economic knowledge related subjects they have chosen. You do only know the core of subjects. As far as we know it may occur that students with or without an economics course can also choose a course in consumer economics. But there are other possibilities for learning economic concepts, e.g. in social studies courses like government/world studies or geography, and so on.

This is nearly the same in Austria. But there are also major differences as one can see looking at Table 4a. It provides information about the number of hours per week for subjects with more or less but mostly less relationships to economics according to type of school, subject, and grade. Note: We have normally 40 weeks of instruction per year and the curricula are always valid for one whole year. Like in the U.S. there are also several subjects with affinity to economics, starting from "History and Social Studies" (No. 1) through "Accounting and Economic Mathematics" (No. 5) to "Economics" itself (No. 7). Similar circumstances are to be found in Germany as one can see on the Table 4b.

The major difference between the U.S. and our countries mentioned above is: Whatever type of school an Austrian or German student has attended, he/she was confronted with economic topics. The major difference between the Austrian and German school type is: From the 8^{th} grade on, teaching in economic-knowledge related subjects differs greatly and these differences should appear in the test results.

Looking only at the amount of hours per week we would expect that students of school type No. 2 (Senior Voc. Schools) in both countries perform best on the WBT. In Austria students of school type No. 3, 5, and 1 follow on the next ranks. In Germany we should find the ranking order put down at the bottom of Table 4b.

2.3. Curriculum-related differences

Tables 4a and 4b do not give an answer to the question to what extent Austrian and German students are substantially confronted with economics and, in particular, with the conception of 'economics' that forms the basis of the TEL. The answer to this question is to be found in a comparison of the 22 concepts in the MCG with the concepts of the syllabus plans of the German and Austrian schools.

Again we have provided a table for this comparison. On Table 5 we have listed the 22 concepts used for the construction of the TEL/WBT. You find for each school type in Austria and in Germany whether a concept is treated or not. Brackets mean that a concept is not explicitly contained in the syllabus but is mentioned indirectly or in additional remarks to the syllabus. Lock at the following example: If the aim in the German syllabus text runs as follows: "Survey of fusion of firms and competition-policy regulations of processes of concentration in a social market economy", we assigned this to concept No. 5 "Economic Institutions and Incentives" but put it in brackets.

The analyses for Austria shows (cf. Table 5):

1. All Austrian students receive economic lessons at school which should be just as demanding with regard to the aims as lessons on the basis of MCG.

2. Until the 8th grade - please look at the column "HS" meaning "lower secondary school" - these lessons are nearly identical for all students and comprise in total about three hours per week over 3 years in a subject called "Geography & Economics".

3. From the 8th school year on all students besides those in vocational schools receive economic lessons although in differing class-years with qualitative and quantitative differences. All the concepts of economics are only to be found in two subjects, namely "Geography & Economics" (No. 3 on Table 4a) and "Economics" (No. 8 on Table 4a). All other subjects are business and business-related courses.

4. Table 5 shows that, directly or indirectly, roughly the same concepts are to be found in the Austrian economics curricula as in the MCG.

5. The Austrian syllabus plans do not allow, as in MCG, the setting of the cognitive level at which the concepts should be taught. The formulation of the aims, how-

ever, shows that, when they leave school, Austrian students should have that knowledge, problem awareness, and faculty of judgement that the MCG demands from American high school students 'with economics'.

6. The German version of the TEL, the WBT, therefore proofs itself as a test which is principally appropriate for the aims of Austrian teaching of economics. It is not unfair to use it to test Austrian students.

The analysis of Table 5 for Germany shows quite different facts:

1. Until the 8th grade there is no instruction in economics nor in economics-related subjects.

2. There is only one group, namely school type 2 ("SVS"), who receives lessons on economics-related objectives nearly to the same extend as the MCG would demand.

3. There is one agreement between Austria and Germany with regard to the curriculum question: The concepts of economics are only presented in two subjects, i.e. "Economics" and "Social Studies".

4. The German (here: the Bavarian) syllabi allow the setting of the aims on a cognitive taxonomy which is slightly different from that in the MCG. Accounting for this differentiation one can calculate a probability score for a correct answer on every item in the WBT. We don't show the procedure for that now. The result is that the average probabilities per item for Form A are falling from .82 (School type 2 "SVS") to .49 (School type 1 "GSS").

5. The question whether the WBT is fair or not can only be answered with a hint to the norms we'll have to calculate. They must differ with respect to the different curricula.

If you are now looking at the bottom of Table 5 you'll remark in the second line from bottom the numbers of occurrences of matchings between the TEL/MCG-concepts and the syllabus plans of our different schools. Again, we can rank the school types with regard to our expectations we should have for the performance on the WBT: The lower the number of matchings, i.e. the lower the number of concepts taught within school type, the lower the chance of the students to reach high scores.

Looking back at Tables 4a and 4b you see that there is some change in the ranks for Austria and Germany. We can learn from this that a comparison only based on the time spent for economic-related instructions is only one possibility to rank the different groups. We will see later on which of our hypotheses on the performance ranks will fit with the data.

3. Teacher's Judgements on the WBT (TEL)

If our analyses of syllabus plans are valid and if teachers give heed to their syllabus plans then we should expect the teachers to judge the WBT as a valid instrument. Is this the case? We asked the teachers of our students to answer the following questions (where we omitted the teachers of school type No. 1 because we couldn't guarantee that they have any knowledge of economics):

> "Please look at the 46 items of the WBT and tell us whether - in your opinion - they are rather good or rather poor indicators for "Economic Literacy". You may express your judgement on a scale running from 1 (very good indicators) to 5 (very poor indicators)."

To examine whether beneath the criterion "Economic Literacy" other concepts with similarity in meaning fit better on the concept represented by the WBT we presented different groups of teachers also the terms "Basic Economic Education" (wirtschaftliche Grundbildung), "Basic Economic Knowledge" (wirtschaftliches Grundwissen), and "Knowledge about Economy" (Wirtschaftskenntnisse).

Moreover we wanted to know whether teachers from different school types differ in the tendency of judgement. Neither school type nor the different concepts produced significant relations within the ratings. Table 6 therefore shows only the overall means for each item.

As one can see the values are quite good (with an average of 2.0 for form A and 2.1 for form B) and the standard deviations are not high. There are only three items which fall on the negative side of the scale: No. 2A, a question on opportunity cost - no wonder that it appears here for this concept is not treated in Austria as you may remember from Table 5; the same is true for item No. 2B; and the third item is a question on the concept of "productivity", namely a question on diminishing returns. For the latter we have at the moment no idea why it is rated not so good. (In the WBT it is nearly a word by word translation from the TEL.)

All in all the teachers judge the items of the WBT as "good" indicators for "Economic Literacy". Their ratings are in the average a little better than those of the university professors we asked in our pilot study (form A: mean 3.15, std. dev. .70; form B: mean 3.3, std. dev. .77; cf. Beck/Krumm 1989, 11). Supposing that teachers' ratings are more curriculum oriented (or curriculum affected) whereas professors' ratings are more related to the "structure of the discipline" we can look at both votes as rather strong arguments for the content validity of the WBT.

To sum up: The teachers' ratings support the results of our curriculum analyses that it makes sense to use the WBT as a measure for Economic Literacy in our countries. Let us now look at the results of our Austrian data.

4. Empirical Results and Comparisons

4.1. Formal Aspects

We start with a glance at some of the most important statistics. They are summed up in Table 7. Though the figures indicate that form A and form B of the WBT are roughly equivalent we have to state that the values for Crombach's alpha, i.e. the internal consistency, and for the average item-total-correlation, i.e. the average discrimination coefficient, are not as good as in the American version. Admittedly, the alpha-coefficients seem to be just acceptable but we view the relatively low amount of the average discrimination coefficients with concern.

On Tables 8a and 8b, left side, the single scores for every item are listed. Some are very low and there are only few scores of sufficient amount. The correlation between the TEL and the WBT discrimination coefficients is only .56 for form A and .38 for form B. The reason for this problem may stem from the heterogeneity of the Austrian students with regard to the reality of instruction they are confronted with. That is: The 22 concepts could be treated in the different school types with very different weights with the consequence that an individual item is not a good predictor for the correctness of answers on the other items.

On the other hand the standard deviations of the means of the WBT are somewhat lower than those of the TEL (cf. Table 7) - a fact which can be seen as an indicator of a greater homogeneity of the Austrian sample. The standard errors of measurement of the TEL and the WBT are nearly the same. This is because the lower reliability coefficient

of WBT is compensated by the lower standard deviation. As a last point of this comparison look at the means of the TEL and the WBT. The differences between Form A and B go in the same direction but, again, the value for the WBT-version is with 1.69 not as low as it would be desirable.

Now, looking at the construct validity we can state that the means of the different groups of students develop in the expected direction. On Table 9a you find on the three right columns the ranks estimated and the ranks drawn from the data. For form A there is one mutual change between school types No. 1 and 3 where we estimated from the analyses of syllabus plans that school type No. 1, the General Secondary School, should range after the Intermediate Vocational School on place No. 3. For form B we found a perfect match of hypothesis and data.

Please remember that we pointed out earlier that the MCG-matches should be the better predictors for the ranks than the hours of instruction. Table 9a shows that this is true on the basis of our data. But again, keep in mind, that making hypotheses on this basis is not yet as precise as one has to wish. It would be better if it were possible to extend the concept of match-counting on a second dimension: the cognitive levels of objectives and the test-items. It is true that between both lies the reality of teaching and learning. We don't know whether the teachers do precisely what the syllabus plans prescribe. But the more books and other learning aids are developed on the basis of syllabus plans the closer the connection between aims and item-responses should be. We are planning therefore an analysis of the most important books, too.

Coming back to the construct validity we can look back at Tables 8a and 8b for a review of the performance on each item for the four groups of students. We must confess that beyond the aggregate data the picture is not as clear as it could be. On form A we have only 12 items with the expected rank order and on form B even only 10. The major exchanges of ranks occur between school types No. 3 and No. 1 where - opposite to the hypothesis - No. 1 shows in 26 cases (form A) and in 24 cases (form B) a higher percentage of correct answers than No. 3.

The reason for that could be that the intellectual level of the students in school type No. 1 is probably higher than that of the students in No. 3, as mentioned earlier. We can test this hypotheses in our next step when we analyze the data we have got on an intelligence test.

After all, looking at the ranks of percentages of correct answers our dissappointment is not so deep as it might have been after the first glance at the data. All in all we are

courageous enough to say that the WBT is an instrument which measures the same as the TEL does with sufficient accurateness.

4.2. Communities and Differences between Austrian and U.S. Students

If we take the results of our data as they are we can at first make a very global statement with regard to the American and the Austrian boys and girls in grade 11 (cf. Table 9a). There is no significant difference between them in the level of performance on TEL or WBT, respectively. To put it in other words: Austrian students are not better nor worse than their American peers, a finding which is to be taken seriously at least from all who are engaged in economic education.

If we look at the results in more detail we remark that the Austrian group with the worst value is in the Dual Vocational System. Their mean is about 3 points lower than the mean of the American high-school students "without economics". We think that we will have to watch carefully whether this result is stable when the number of persons included is growing. At the moment we have only the data from 64 students from this school type. Therefore it is perhaps too early to look at consequences which were to be drawn from this.

On the other side of the scale we find that the American students with economics are as successful on our instrument as the best subgroup of the Austrian students (i.e. No. 2; cf. Table 9a). That is very impressive because the Austrian students receive much more lessons with economics-related contents than their American peers. Admittedly they have a lot to learn in business, management, and law. But we had expected that they should perform significantly better on the WBT than their American equals in age did on the TEL. May be, the main reason is that they will be tought "pure" economics only in grade 13 (cf. Table 4a). After that they will probably perform significantly better than their American counterparts. In our first paper we had preliminary findings from three classes of grade 13. Their mean WBT-score for from A was 25.93 and for form B 28.80.

If comparing American students who had a course in Social Studies with the Austrian school type No. 1 students one looks at two groups who have in common that their first or, let's say, vocational interest - also in terms of curricula - is not economics nor business. Nevertheless they reach comparatively high scores on our instruments. We think that one should not exclude that students grasp the ideas of economics, the concepts of MCG, better if they are taught rather in the context of politics than in the con-

text of business and management problems. Perhaps it is more motivating to think about economics problems as problems with some latitude for moulding by politicians - in other words: to look at economics through the eyes of a citizen with his whishes, demands, and claims. On the other side of this view stands the supposition that in the context of vocational training the students can't see where it is possible to influence or to use circumstances which we describe with economics concepts. If it is true that it is more motivating to think in acts, at least in virtual acts, then it might be plausible that students are more successful in thinking of themselves acting "on economics" as politicians than as single subjects in firms, e.g. as managers.

These considerations would also match on our results for the Austrian Senior Vocational Schools. Students attend them not only with the aim to be vocationally trained but also to get the allowance to enter university. It is in this case not unlikely that they draw their motivation for learning economics from the latter perspective, namely thinking as a critical citizen.

Going back to our data we found last but not least another similarity between the TEL-data and the WBT-data. As you can easily see on Table 9b our girls perform also not as well as the boys do on the test. This result is compatible with our everyday experiences but is from our point of view not at all acceptable. As Marianne A. Ferber (1990) states economics is infected with male-specific concepts, pictures, and examples. And it should be possible to change things towards more gender balance. The same may be true for an access to economics from the side of social studies. At least in Europe we are used to talk about politics in terms of acting men rather than women. And most young girls cannot imagine to be themselves the acting subject in politics.

On the other hand looking at the U.S. data it seems that the differences <u>within</u> the gender groups are larger than <u>between</u>. Therefore whether one deplores or neglects the gender differences our common main problem is to raise the level of economic literacy. We are not very hopefully with regard to a quick reaching of this aim. Yet we are not only hopefully but sure that we can present soon more and more detailed data and information on the empirical facts concerning the state of economic literacy in our countries.

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Table 1a:
School Structure: Austria

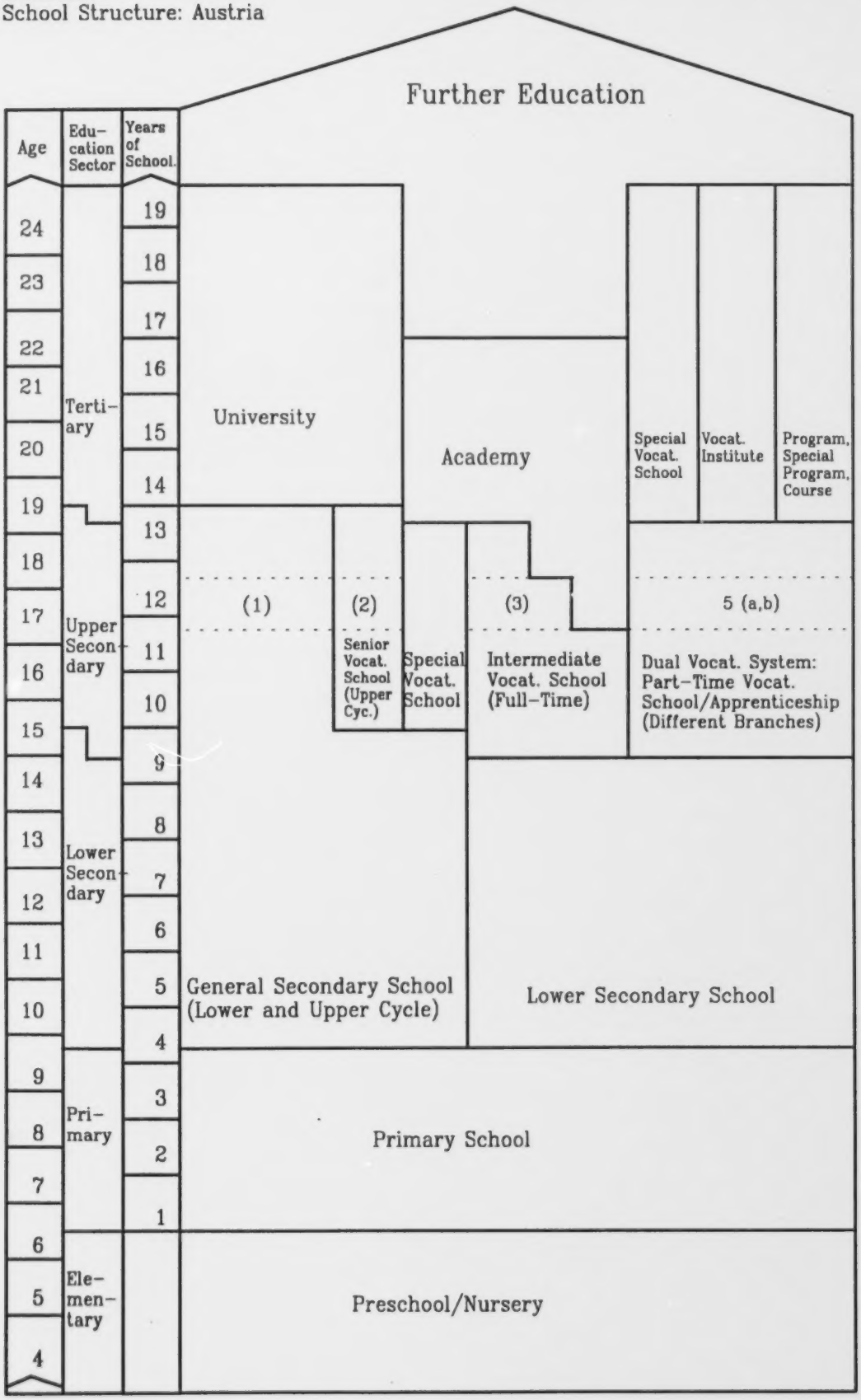

Table 1b:
School Structure: Germany

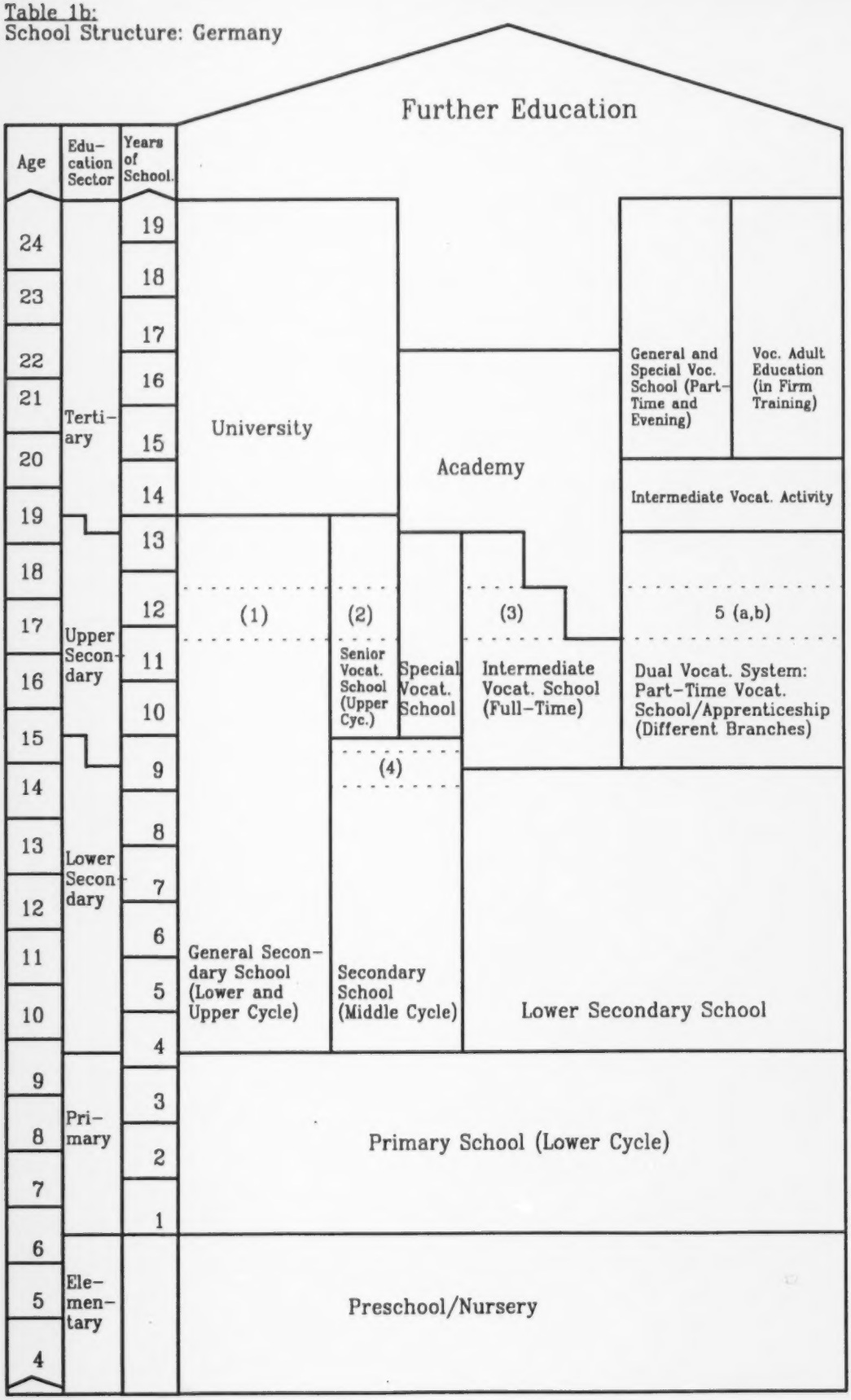

Table 1c:
School Structure: USA

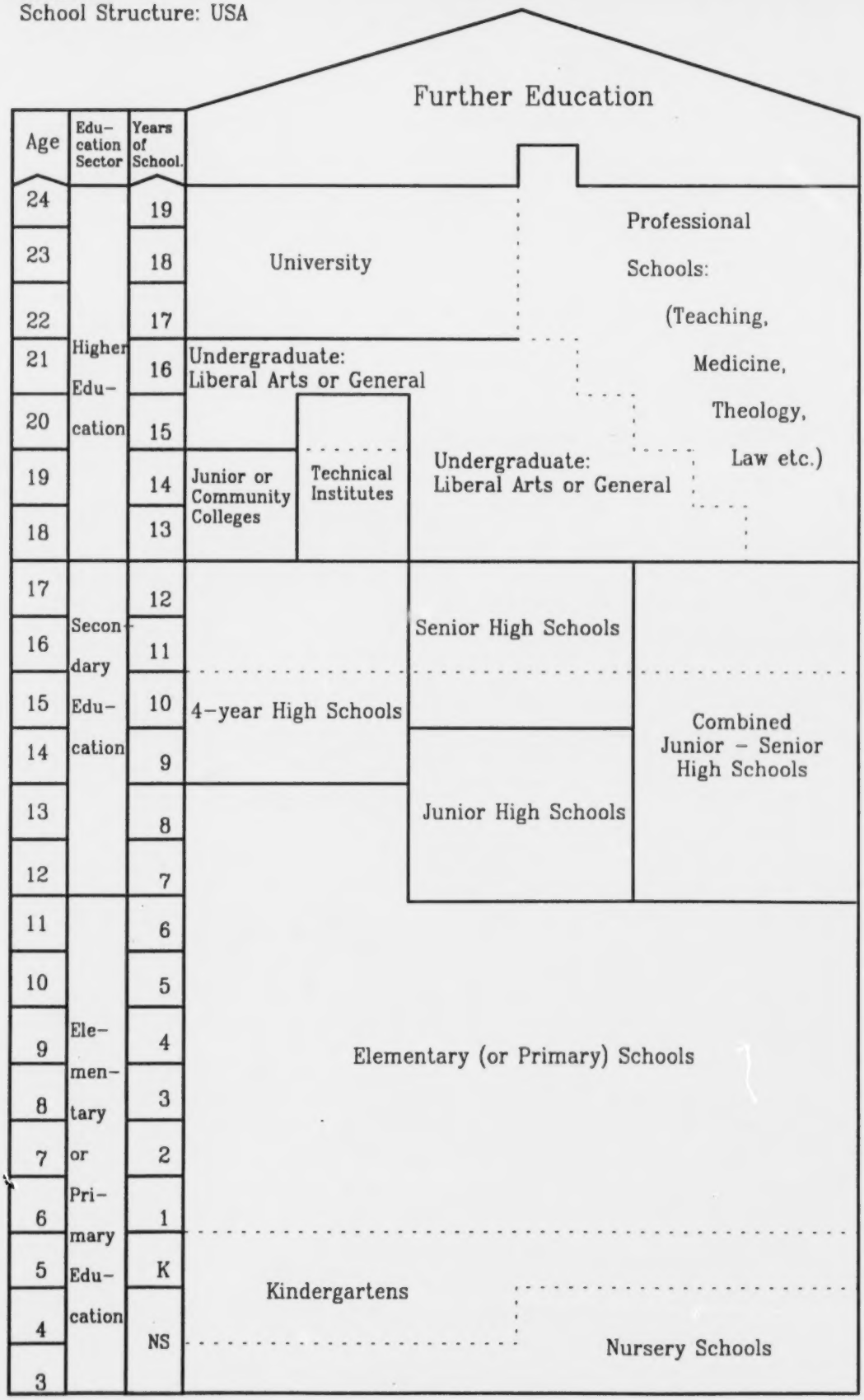

Table 2: School Types: Short Descriptions (Austria and Germany)

The WBT was administered in the following schools:

No.	Short Name	Designation	Description
1	GGS	General Secondary School	Schools of general education (not vocational) which provide the possibility of attending university.
2	SVS	Senior Vocational School	Schools of general and vocational education permitting entrance to university as well as to business (with a degree). The vocational qualification is in Austria higher than in Germany.
3	IVS	Intermediate Vocational School	School of vocational education providing a middling training for a career in business (no entrance to university).
4	SSG	Secondary School (Germany only)	School of general education (not vocational) providing a middling degree for entrance to secondary higher education institutions.
5	DVS	Dual Vocational System	School of vocational education for apprentices offering a one-or-two-days trainig per week ("theoretical background" for the "practical" work in the firm for the rest of the week).
5a	DVS/R	-/Retail (commercial depts.)	Different branches (agricultural, house keeping,
5b	DVS/I	-/Industry (commercial depts.)	crafts, commercial)

Table 3: Percentages of an Age-Group Attending the Different School Types

	School Type 1 Gen.Sec.Sch.	2 Sec.Voc.Sch.	3 Int.Voc.Sch.	5 Dual Voc. Syst.	thereunder commercial	others
Austria	15,2	3,8	5,8	49,4	23,7	25,8
					thereunder commercial	
Germany	27,3	2,0	10,3	30,7	10,3	29,7

Table 4a: Economic Knowledge related subjects with hours of instruction per week: AUSTRIA

Subject	Grades	Type of School 1 Gen. Voc. Sch.				2 Sen.Voc.Sch.					3 Int. Voc. Sch.			5a Dual Voc Syst/Ret			5b Dual Voc Syst/Ind		
		9	10	11	12	9	10	11	12	13	9	10	11	10	11	12	10	11	12
1. History & Social Studies		2	2	2	2									-	1	1	-	1	1
2. History & Social Studies (Economic History)								2	2	2									
3. Geography & Economics		2	2	2	2									2	-	-	2	-	-
4. Geography & Economics (Economic Geography)						3	2	2	3	3									
5. Accounting & Economics + Mathematics						4+2	2	3	3	3	4+2	2	4	2	3	2	2	4	4
6. Business & Management						3	3	3	3	3	3	4	4	2	2	2	2	2	2
7. Special Business & Management (e. g. retail, industry)									3										
8. Economics										2			2						
Sum per grade		4	4	4	4	12	7	10	14	13	9	6	10	6	6	5	6	7	7
Sum total		16				56					25			17			20		
Rank		5.				1.					2.			4.			3.		

Table 4b: Economic Knowledge related subjects with hours of instruction per week: GERMANY

Subject	Grades	Type of School: 1 Gen. Voc. Sch.			2 Sen. Voc. Sch.						3 Int. Voc. Sch.			4 Sec. Sch. (9)		5a Dual Voc Syst/Ret			5b Dual Voc Syst/Ind		
		8	9	10	8	9	10	11	12	13	9	10	11	9	10	10	11	12	10	11	12
1. Social Studies																2	2	1	1	1	1
2. Book keeping																2	-	-	2	-	-
3. Economic Maths											2	1	-			1	-	-	1	-	-
4. Accounting (partly with EDP)					-	2	2	3	-	-	4	3 +1	3 +2			-	2	2	-	3	3
5. Business, Economics, and Law		1	1	1	1	4	4	3	6	6				2	1	4	2	2	3	2	1
6. Business & Management											3	3	3								
7. Special Business & Management (e. g. retail, industry, organization)											-	2	1								
8. Economics											-	-	2								
Sum per grade		1	1	1	1	6	6	6	6	6	9	10	11	2	1	9	6	5	7	6	5
Sum total		3			31						30			3		20			18		
Rank		5./6.			1.						2.			5./6.		3.			4.		

Table 5: Analyis of Syllabus Plans of the Different School Types on the Basis of the 22 TEL/MCG-Concepts

Country	Austria						Germany					
School Type	0	1	2	3	5		1	2	3	4	5	
TEL/MCG-Concept	HS	GSS	SVS	IVS	DVS/R	DVS/I	GSS	SVS	IVS	SSG	DVS/R	DVS/I
1 Scarcity	(X)	X	(X)	(X)	(X)	(X)	X	X		X	(X)	(X)
2 Opp. cost/trade offs												
3 Productivity	X	X	(X)	(X)	X	X	X	(X)		(X)		
4 Economic systems	X	X	X	X				X	X	X	X	X
5 Ec. inst. & incentives	X	X	X	X				X	(X)		X	X
6 Exchange, money, interdep.	X	(X)	X	(X)			X	X		X		X
7 Markets & prices	X	X	X	X	X	X	X	X	X	X	(X)	X
8 Supply & demand	(X)	(X)	X	(X)		(X)	X	X	X	X	X	X
9 Compet. & market struct.	X	X	(X)	(X)	X	X		X	X	X	X	X
10 Income distribution	(X)	(X)	X	X			X	X		X	X	X
11 Market failures			X					X				
12 Role of Government	(X)	(X)	X	(X)			X	X	X	X	X	X
13 Gross national prod.	X	(X)	X	X				X	X	X		
14 Aggregate supply			(X)	(X)				X			X	X
15 Aggregate demand			(X)	(X)				X		X	X	X
16 Unemployment	X	(X)	(X)	(X)				X	(X)			
17 Inflation & deflation	X	(X)	X	X				(X)	X	X		
18 Monetary policy	(X)	(X)	X	(X)				X	X		X	X
19 Fiscal policy	(X)	X	X	(X)				X		X		
20 Comp. advant./trade barr.	(X)	X	(X)					X				
21 Bal. of payment/exch. rates	(X)	X	X	(X)		(X)		X	X	X		
22 Int. groth & stability	(X)	X	X	X				X				
Number of Matches with TEL/MCG	(18)	18	21	19	4	6	7	21	11	14	11	12
Rank (expected in WBT performance)	not appl	3.	1.	2.	5.	4.	6.	1.	4./5.	2.	4./5.	3.

Table 6:

Ratings of Austrian Teachers on WBT Items (N_A~37, N_B~25)

	Form A		Form B	
Item	Mean	Std.Dev.	Mean	Std.Dev.
1	1.9	.8	2.7	1.1
2	3.5	1.4	3.6	1.3
3	1.8	1.0	2.1	1.1
4	2.1	1.0	2.4	.8
5	2.9	1.3	3.1	1.1
6	1.8	.9	1.9	1.1
7	1.4	.6	1.6	.8
8	2.0	.9	2.2	1.0
9	1.5	.6	1.7	.8
10	2.6	1.1	2.1	.7
11	2.4	.9	2.1	.7
12	1.8	.9	2.2	.8
13	1.5	.7	1.5	.6
14	1.9	.8	2.0	.9
15	2.2	1.4	2.3	1.3
16	2.0	1.0	1.6	1.0
17	2.7	1.1	2.4	1.2
18	1.8	1.0	2.0	1.0
19	2.0	.8	2.0	.9
20	2.4	1.0	2.2	1.1
21	1.8	.6	1.8	.7
22	2.8	1.2	1.9	1.0
23	2.0	1.1	2.7	1.3
24	2.1	.9	2.0	1.2
25	1.1	2.1	2.1	1.2
26	1.7	1.0	1.6	.6
27	2.0	.8	2.2	1.0
28	2.1	1.1	2.3	.8
29	2.5	1.2	2.7	1.2
30	1.7	1.3	1.8	.9
31	1.8	1.0	1.8	1.1
32	1.8	.9	1.8	1.0
33	2.1	.9	1.5	.7
34	1.8	.9	1.8	.7
35	2.2	1.1	2.2	.9
36	1.8	1.1	2.1	.8
37	1.9	1.0	1.9	.8
38	2.0	1.0	2.2	1.0
39	2.1	1.1	2.3	.8
40	2.5	1.2	3.3	1.4
41	2.1	1.0	2.3	.8
42	1.7	.8	2.2	.8
43	2.1	1.0	2.1	.8
44	2.3	1.1	1.9	1.3
45	1.6	.9	1.7	.6
46	1.9	.8	2.1	.8
Average:	2.0	.4	2.1	.5

Note: (1 = very good, 5 = very bad, 3 = 'mean')

Table 7:

Comparative Aggregate Statistics for TEL and WBT (Austria only)

	A		B	
	TEL	WBT	TEL	WBT
Number of Students	4235	356	3970	338
Cronbach's Alpha	.87	.75	.88	.79
Mean	22.06	21.45	22.13	23.14
Std. Dev. of Mean	8.33	6.10	8.68	6.63
Std. Error of Measurement	3.06	3.05	3.04	3.03
Average Item-Total-Correlation	.32	.21	.34	.24

Table 8a:

Percentages of Correct Responses and Discrimination Power of WBT Form A

Item	Corrected Item-Total-Correlation (N=356)	Percent Correct 1 GSS (N=80)	2 SVS (N=128)	3 IVS (N=114)	5 DVS (N=34)
1	.16	57.5	67.2	66.7	55.9
2	.24	28.8	43.0	34.2	26.5
3	.07	8.8	9.4	20.2	11.8
4	.15	30.0	29.7	27.2	5.9
5	.22	25.0	28.9	21.9	14.7
6	.27	42.5	67.2	46.5	26.5
7	.18	95.0	88.3	85.1	73.5
8	.15	72.5	73.4	72.8	58.8
9	.23	66.3	94.5	88.6	41.2
10	.26	51.3	41.4	36.0	14.7
11	.28	73.8	82.8	62.3	50.0
12	.17	61.3	66.4	62.3	58.8
13	.26	58.8	68.0	56.1	47.1
14	.18	35.0	44.5	41.2	35.3
15	.19	53.8	40.6	42.1	20.6
16	.29	51.3	54.7	36.8	32.4
17	.12	37.5	46.9	40.4	26.5
18	.36	81.3	89.8	74.6	61.8
19	.34	61.3	72.7	61.4	41.2
20	.34	45.0	42.2	24.6	17.6
21	.27	46.3	59.4	48.2	23.5
22	.10	15.0	24.2	16.7	20.6
23	.24	31.3	38.3	16.7	20.6
24	.15	57.5	67.2	65.8	52.9
25	.04	1.3	7.8	7.9	17.6
26	.32	51.3	64.8	40.4	29.4
27	.24	41.3	42.2	43.9	29.4
28	.10	46.3	44.5	36.0	26.5
29	.34	71.3	52.3	51.8	26.5
30	.25	65.0	67.2	54.4	26.5
31	.23	50.0	43.0	25.4	23.5
32	.03	53.8	48.4	50.9	58.8
33	.04	28.8	22.7	24.6	35.3
34	.14	41.3	34.4	30.7	20.6
35	.03	27.5	36.7	33.3	50.0
36	.30	83.8	84.4	75.4	38.2
37	.27	60.0	62.5	47.4	35.3
38	.07	41.3	36.7	32.5	32.4
39	.23	40.0	53.1	41.2	26.5
40	.28	47.5	46.9	48.2	20.6
41	.26	36.3	41.4	33.3	17.6
42	.32	58.8	63.3	58.8	26.5
43	.16	30.0	23.4	21.9	29.4
44	.26	52.5	53.9	50.0	35.3
45	.36	58.8	60.9	52.6	41.2
46	.30	41.3	33.6	31.6	23.5

Table 8b:

Percentages of Correct Responses and Discrimination Power of WBT Form B

Item	Corrected Item-Total-Correlation (N=338)	Percent Correct 1 GSS (N=72)	2 SVS (N=131)	3 IVS (N=105)	5 DVS (N=30)
1	.10	19.4	35.1	42.9	26.7
2	.20	36.1	47.3	34.3	36.7
3	.09	15.3	26.7	21.0	6.7
4	.25	66.7	77.1	63.8	46.7
5	.18	23.6	20.6	26.7	20.0
6	.35	31.9	62.6	47.6	20.0
7	.15	86.1	84.0	81.9	86.7
8	.30	50.0	80.2	63.8	63.3
9	.26	52.8	94.7	82.9	63.3
10	.10	72.2	72.5	75.2	66.7
11	.33	63.9	80.2	62.9	36.7
12	.05	34.7	44.3	45.7	40.0
13	.20	69.4	74.8	62.9	63.3
14	.33	50.0	61.1	39.0	36.7
15	.30	84.7	80.9	78.1	53.3
16	.31	59.7	77.9	66.7	53.3
17	.19	29.2	45.8	52.4	40.0
18	.25	75.0	87.8	78.1	70.0
19	.37	62.5	69.5	58.1	23.3
20	.25	37.5	41.2	43.8	20.0
21	.29	55.6	52.7	50.5	30.0
22	.32	50.0	70.2	56.2	46.7
23	.26	45.8	47.3	34.3	20.0
24	.26	31.9	55.7	24.8	20.0
25	.08	18.1	25.2	17.1	26.7
26	.26	50.0	57.3	48.6	23.3
27	.29	59.7	80.2	62.9	36.7
28	.04	33.3	25.2	31.4	26.7
29	.36	76.4	71.8	62.9	13.3
30	.30	45.8	58.8	40.0	33.3
31	.28	65.3	74.8	57.1	43.3
32	.33	25.0	48.9	30.5	10.0
33	.31	75.0	74.8	78.1	33.3
34	.30	38.9	47.3	28.6	20.0
35	.03	26.4	32.1	31.4	33.3
36	.35	59.7	73.3	60.0	36.7
37	.32	58.3	61.1	49.5	20.0
38	.18	16.7	22.1	21.0	16.7
39	.09	30.6	35.9	42.9	43.3
40	.27	33.3	45.0	26.7	13.3
41	.26	51.4	43.5	34.3	16.7
42	.40	38.9	48.1	30.5	26.7
43	.22	29.2	36.6	26.7	30.0
44	.19	43.1	65.6	66.7	40.0
45	.28	50.0	54.2	49.5	20.0
46	.16	41.7	54.2	45.7	26.7

Table 9a: Comparisons of Means Between Students in the U.S. and Austria by School or Course Type

No. and Group of Students	Mean	Std.Dev.	N	hours of instr.	Rank matches MCG	emp. data
Form A						
Austria						
1 Gen. Sec. Sch.	22.14	5.2	80	5	3	2
2 Sen. Voc. Sch.	23.65	5.6	128	1	1	1
3 Int. Voc. Sch.	20.40	6.3	114	2	2	3
5 Dual Voc. Syst.	15.09	4.0	34	3/4	4/5	4/5
overall	21.45	6.1	356			
U.S. (by course type)*						
6 Economics	23.57	8.5	2.585			
7 Consumer Ec.	21.70	8.0	309			
8 Soc. Studies	22.85	8.7	259			
overall	23.33	8.4	3.153			
Form B						
Austria						
1 Gen. Sec. Sch.	21.71	6.6	72	5	3	3
2 Sen. Voc. Sch.	26.26	6.5	131	1	1	1
3 Int. Voc. Sch.	22.35	5.2	105	2	2	2
5 Dual Voc. Syst.	15.80	3.8	30	3/4	4/5	4/5
overall	23.14	6.6	338			
U.S. (by course type)*						
6 Economics	25.55	8.9	1.930			
7 Consumer Ec.	18.07	7.0	405			
8 Soc. Studies	22.14	7.6	430			
overall	23.92	8.9	2.765			

* Taken from Soper/Walstad 1987, 20-21

Table 9b: Comparisons of Means Between Students in the U.S. and Austria by Gender

WBT	Form A N	Form A Mean	Form A Std.Dev.	Form B N	Form B Mean	Form B Std.Dev.
Males	120	23.54	5.45	120	25.40	5.60
Females	212	20.20	6.20	197	21.74	6.89
TEL*						
Males (with E.)	1.516	23.97	8.83	1.371	24.78	9.33
Males (without)	453	18.84	7.19	579	18.33	7.19
Females (with E.)	1.412	22.68	7.95	1.376	23.11	8.26
Females (without)	475	18.12	6.14	614	17.78	6.07

* Taken from Soper/Walstad 1987, 20-21

Economic Literacy in the United States, Germany and Austria - Results of Cross National Studies *

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1. Introduction

"In 1988, it was reported in the United States that there was a problem with economic literacy of the American high school Students (Walstad and Soper, 1988). We do not know if the same is true for the German-speaking countries. The reason is not that high school students in these countries possess a high standard of economic literacy, but rather that the state of economic knowledge among students has never been assessed. To correct this situation, we decided to translate the Test of Economic Literacy (TEL) (Soper and Walstad, 1987) and to administer this German version to students in our countries."

With these words we began our first paper presentation on this problem at the AERA meeting 1989 in San Francisco. In the "first phase" we wanted to examine whether the TEL is suitable as a test for assessing the economic literacy of German-speaking students. In short we firstly reported the translation problems, secondly the results of a questioning of German, Austrian and Swiss University professors as to the content validity of the German version of the TEL, which we call WBT ("Wirtschaftskundlicher Bildung-Test") and, thirdly, the outcomes of a first application of the WBT with some 750 students.

Here it is enough to say that the results of this pilot study motivated us to continue this work. On the basis of an itemanalysis we improved some items with extreme values on difficulty or discrimination scores. We are now applying the revised version on larger samples of Austrian an German students in different levels and branches of our school systems.

Besides assessing the WBT-score we gather data on attitudes to economics, on intelligence, and on moral maturity. We think that these concepts are components of "economic education" in the wider sense of this notion.

Today we would like to present and discuss some results of our investigations concerning the WBT. One of our main interest points is the comparison between the US and our countries with regard to the achievement level of the 11^{th} and the 12^{th} graders. Unfortunately, to date we have not enough data from the German students because of not forseen difficulties with the school boards concerning their readiness to allow the collection of data. But today the school doors are open. Yet the time was too short to have all data collected and computed for this meeting. We are now able to present the results from a sufficiently large sample of Austrian students and we have also the

information about their teachers' judgements of the WBT-items which is important for the evaluation of its content validity.

Before showing the results of the different tested groups we have tested it is necessary to analyze the conditions for the comparison, i.e. the curricular prerequisites under which the data are to interprete. Then we want to draw your attention on the opinions of the teachers about the WBT. We can learn from that whether the measure one obtains from administering the WBT is something which - in the eyes of this important group of experts - relies on a relevant basis of content. Our last point is the presentation of the results we got in testing four different groups of Austrian students and the comparison with their US-American peers whose measures were published by Soper and Walstad in 1987.

2. Economic Education in the USA, Germany and Austria

Comparisons of school achievement always beg to question whether the instrument of measurement is equally appropriate for students from several (school) cultures. The problem of comparing student samples and therefore of 'test fairness' must be discussed on the outset. Only when this is explained the comparative data can be meaningfully interpreted.

2.1. School systemrelated differences

A comparative analysis of the central features of Economic Education provide a first answer as to the fairness of the test. We have attempted this on two levels so far:

1. Comparison of the school systems
2. Comparison of the curricula.

Let us start with the school systems. We have tried to depict the most important features of the three school systems for a comparison. Tables 1a, b, and c show the different structures.

For those who are familiar with the American system it is sufficient to remark only one point of Table 1a for the comparison: Students in classes 11 and 12 attend without major exceptions one school type, the Senior High School. Within this school the

students have usually the choice between many optional subjects, one of which is economics.

The German and Austrian school system is considerably different in this respect. Students in grades 11 and 12/13 attend many types of schools in Austria and Germany. Only the Elementary Schools (grades 1-4) are comprehensive schools in both countries.

German and Austrian students at the age of 10 and then again at the age of 14 (Austria) or 15 (Germany) have to choose which of the school types listed on Table 2 they want to attend. They are not allowed to decide whether or not they will be tought a lot of economics at these schools. The course-content is mandatory (with only very few exceptions).

These differences in the systems of the USA on the one hand and of Austria and Germany on the other "distort" the comparison of the Economic Literacy of the students. The American students have the possibility of choosing 'economics' among many other courses at their comprehensive school. The German and Austrian students must choose between types of schools and this decision is probably in no way influenced by their interest in economics. They are looking at the legitimations they can get at any school and at the role it can play in career planning but they normally don't look at the content and the objectives of the curricula.

For the comparison with US-data we have drawn the major part of our sample from the group of the 17 years old students who were in the last but one or in the last year of their school. (The only major exception is school type No. 4 (Germany); the reasons for the inclusion of that group are not to discuss here for we'll not present data for it.)

It may be of interest to know the approximate percentage of an age-group attending the different schooltypes. The figures we show on Table 3 are somewhat rough estimators - it is very difficult to get valide informations - but they show the quantitative importance especially for the vocational schools.

This may be enough for a first glance at the institutional conditions under which the comparison has to be done. It is hard to say which of the Austrian/German groups is the most similar to the American high school students. May be this is mostly true of our No. 1 - students (at least looking at the formal structure of the education; cf. Table 3) but one must have in mind that our No. 1 - students are, so to say, of the best quality, the brightest ones. With respect to the general level of intellectual competencies the students in the school types No. 3 and 5 would - roughly spoken - be more similar to

American highschool students. But the difference is that they have already made a complete decision of vocational specialization. We will reach a better answer to this question when we look at the time tables and the curricula of our young poeple.

2.2. Time Budget-related differences

In American schools where students usually choose economics in the 11^{th} or 12^{th} classes it cannot be easily grasped which additional economic knowledge related subjects they have chosen. You do only know the core of subjects. As far as we know it may occur that students with or without an economics course can also choose a course in consumer economics. But there are other possibilities for learning economic concepts, e.g. in social studies courses like government/world studies or geography, and so on.

This is nearly the same in Austria. But there are also major differences as one can see looking at Table 4a. It provides information about the number of hours per week for subjects with more or less but mostly less relationships to economics according to type of school, subject, and grade. Note: We have normally 40 weeks of instruction per year and the curricula are always valid for one whole year. Like in the U.S. there are also several subjects with affinity to economics, starting from "History and Social Studies" (No. 1) through "Accounting and Economic Mathematics" (No. 5) to "Economics" itself (No. 7). Similar circumstances are to be found in Germany as one can see on the Table 4b.

The major difference between the U.S. and our countries mentioned above is: Whatever type of school an Austrian or German student has attended, he/she was confronted with economic topics. The major difference between the Austrian and German school type is: From the 8^{th} grade on, teaching in economic-knowledge related subjects differs greatly and these differences should appear in the test results.

Looking only at the amount of hours per week we would expect that students of school type No. 2 (Senior Voc. Schools) in both countries perform best on the WBT. In Austria students of school type No. 3, 5, and 1 follow on the next ranks. In Germany we should find the ranking order put down at the bottom of Table 4b.

2.3. Curriculum-related differences

Tables 4a and 4b do not give an answer to the question to what extent Austrian and German students are substantially confronted with economics and, in particular, with the conception of 'economics' that forms the basis of the TEL. The answer to this question is to be found in a comparison of the 22 concepts in the MCG with the concepts of the syllabus plans of the German and Austrian schools.

Again we have provided a table for this comparison. On Table 5 we have listed the 22 concepts used for the construction of the TEL/WBT. You find for each school type in Austria and in Germany whether a concept is treated or not. Brackets mean that a concept is not explicitly contained in the syllabus but is mentioned indirectly or in additional remarks to the syllabus. Lock at the following example: If the aim in the German syllabus text runs as follows: "Survey of fusion of firms and competition-policy regulations of processes of concentration in a social market economy", we assigned this to concept No. 5 "Economic Institutions and Incentives" but put it in brackets.

The analyses for Austria shows (cf. Table 5):

1. All Austrian students receive economic lessons at school which should be just as demanding with regard to the aims as lessons on the basis of MCG.

2. Until the 8th grade - please look at the column "HS" meaning "lower secondary school" - these lessons are nearly identical for all students and comprise in total about three hours per week over 3 years in a subject called "Geography & Economics".

3. From the 8th school year on all students besides those in vocational schools receive economic lessons although in differing class-years with qualitative and quantitative differences. All the concepts of economics are only to be found in two subjects, namely "Geography & Economics" (No. 3 on Table 4a) and "Economics" (No. 8 on Table 4a). All other subjects are business and business-related courses.

4. Table 5 shows that, directly or indirectly, roughly the same concepts are to be found in the Austrian economics curricula as in the MCG.

5. The Austrian syllabus plans do not allow, as in MCG, the setting of the cognitive level at which the concepts should be taught. The formulation of the aims, how-

ever, shows that, when they leave school, Austrian students should have that knowledge, problem awareness, and faculty of judgement that the MCG demands from American high school students 'with economics'.

6. The German version of the TEL, the WBT, therefore proofs itself as a test which is principally appropriate for the aims of Austrian teaching of economics. It is not unfair to use it to test Austrian students.

The analysis of Table 5 for Germany shows quite different facts:

1. Until the 8th grade there is no instruction in economics nor in economics-related subjects.

2. There is only one group, namely school type 2 ("SVS"), who receives lessons on economics-related objectives nearly to the same extend as the MCG would demand.

3. There is one agreement between Austria and Germany with regard to the curriculum question: The concepts of economics are only presented in two subjects, i.e. "Economics" and "Social Studies".

4. The German (here: the Bavarian) syllabi allow the setting of the aims on a cognitive taxonomy which is slightly different from that in the MCG. Accounting for this differentiation one can calculate a probability score for a correct answer on every item in the WBT. We don't show the procedure for that now. The result is that the average probabilities per item for Form A are falling from .82 (School type 2 "SVS") to .49 (School type 1 "GSS").

5. The question whether the WBT is fair or not can only be answered with a hint to the norms we'll have to calculate. They must differ with respect to the different curricula.

If you are now looking at the bottom of Table 5 you'll remark in the second line from bottom the numbers of occurrences of matchings between the TEL/MCG-concepts and the syllabus plans of our different schools. Again, we can rank the school types with regard to our expectations we should have for the performance on the WBT: The lower the number of matchings, i.e. the lower the number of concepts taught within school type, the lower the chance of the students to reach high scores.

Looking back at Tables 4a and 4b you see that there is some change in the ranks for Austria and Germany. We can learn from this that a comparison only based on the time spent for economic-related instructions is only one possibility to rank the different groups. We will see later on which of our hypotheses on the performance ranks will fit with the data.

3. Teacher's Judgements on the WBT (TEL)

If our analyses of syllabus plans are valid and if teachers give heed to their syllabus plans then we should expect the teachers to judge the WBT as a valid instrument. Is this the case? We asked the teachers of our students to answer the following questions (where we omitted the teachers of school type No. 1 because we couldn't guarantee that they have any knowledge of economics):

> "Please look at the 46 items of the WBT and tell us whether - in your opinion - they are rather good or rather poor indicators for "Economic Literacy". You may express your judgement on a scale running from 1 (very good indicators) to 5 (very poor indicators)."

To examine whether beneath the criterion "Economic Literacy" other concepts with similarity in meaning fit better on the concept represented by the WBT we presented different groups of teachers also the terms "Basic Economic Education" (wirtschaftliche Grundbildung), "Basic Economic Knowledge" (wirtschaftliches Grundwissen), and "Knowledge about Economy" (Wirtschaftskenntnisse).

Moreover we wanted to know whether teachers from different school types differ in the tendency of judgement. Neither school type nor the different concepts produced significant relations within the ratings. Table 6 therefore shows only the overall means for each item.

As one can see the values are quite good (with an average of 2.0 for form A and 2.1 for form B) and the standard deviations are not high. There are only three items which fall on the negative side of the scale: No. 2A, a question on opportunity cost - no wonder that it appears here for this concept is not treated in Austria as you may remember from Table 5; the same is true for item No. 2B; and the third item is a question on the concept of "productivity", namely a question on diminishing returns. For the latter we have at the moment no idea why it is rated not so good. (In the WBT it is nearly a word by word translation from the TEL.)

All in all the teachers judge the items of the WBT as "good" indicators for "Economic Literacy". Their ratings are in the average a little better than those of the university professors we asked in our pilot study (form A: mean 3.15, std. dev. .70; form B: mean 3.3, std. dev. .77; cf. Beck/Krumm 1989, 11). Supposing that teachers' ratings are more curriculum oriented (or curriculum affected) whereas professors' ratings are more related to the "structure of the discipline" we can look at both votes as rather strong arguments for the content validity of the WBT.

To sum up: The teachers' ratings support the results of our curriculum analyses that it makes sense to use the WBT as a measure for Economic Literacy in our countries. Let us now look at the results of our Austrian data.

4. Empirical Results and Comparisons

4.1. Formal Aspects

We start with a glance at some of the most important statistics. They are summed up in Table 7. Though the figures indicate that form A and form B of the WBT are roughly equivalent we have to state that the values for Crombach's alpha, i.e. the internal consistency, and for the average item-total-correlation, i.e. the average discrimination coefficient, are not as good as in the American version. Admittedly, the alpha-coefficients seem to be just acceptable but we view the relatively low amount of the average discrimination coefficients with concern.

On Tables 8a and 8b, left side, the single scores for every item are listed. Some are very low and there are only few scores of sufficient amount. The correlation between the TEL and the WBT discrimination coefficients is only .56 for form A and .38 for form B. The reason for this problem may stem from the heterogeneity of the Austrian students with regard to the reality of instruction they are confronted with. That is: The 22 concepts could be treated in the different school types with very different weights with the consequence that an individual item is not a good predictor for the correctness of answers on the other items.

On the other hand the standard deviations of the means of the WBT are somewhat lower than those of the TEL (cf. Table 7) - a fact which can be seen as an indicator of a greater homogeneity of the Austrian sample. The standard errors of measurement of the TEL and the WBT are nearly the same. This is because the lower reliability coefficient

of WBT is compensated by the lower standard deviation. As a last point of this comparison look at the means of the TEL and the WBT. The differences between Form A and B go in the same direction but, again, the value for the WBT-version is with 1.69 not as low as it would be desirable.

Now, looking at the construct validity we can state that the means of the different groups of students develop in the expected direction. On Table 9a you find on the three right columns the ranks estimated and the ranks drawn from the data. For form A there is one mutual change between school types No. 1 and 3 where we estimated from the analyses of syllabus plans that school type No. 1, the General Secondary School, should range after the Intermediate Vocational School on place No. 3. For form B we found a perfect match of hypothesis and data.

Please remember that we pointed out earlier that the MCG-matches should be the better predictors for the ranks than the hours of instruction. Table 9a shows that this is true on the basis of our data. But again, keep in mind, that making hypotheses on this basis is not yet as precise as one has to wish. It would be better if it were possible to extend the concept of match-counting on a second dimension: the cognitive levels of objectives and the test-items. It is true that between both lies the reality of teaching and learning. We don't know whether the teachers do precisely what the syllabus plans prescribe. But the more books and other learning aids are developed on the basis of syllabus plans the closer the connection between aims and item-responses should be. We are planning therefore an analysis of the most important books, too.

Coming back to the construct validity we can look back at Tables 8a and 8b for a review of the performance on each item for the four groups of students. We must confess that beyond the aggregate data the picture is not as clear as it could be. On form A we have only 12 items with the expected rank order and on form B even only 10. The major exchanges of ranks occur between school types No. 3 and No. 1 where - opposite to the hypothesis - No. 1 shows in 26 cases (form A) and in 24 cases (form B) a higher percentage of correct answers than No. 3.

The reason for that could be that the intellectual level of the students in school type No. 1 is probably higher than that of the students in No. 3, as mentioned earlier. We can test this hypotheses in our next step when we analyze the data we have got on an intelligence test.

After all, looking at the ranks of percentages of correct answers our dissappointment is not so deep as it might have been after the first glance at the data. All in all we are

courageous enough to say that the WBT is an instrument which measures the same as the TEL does with sufficient accurateness.

4.2. Communities and Differences between Austrian and U.S. Students

If we take the results of our data as they are we can at first make a very global statement with regard to the American and the Austrian boys and girls in grade 11 (cf. Table 9a). There is no significant difference between them in the level of performance on TEL or WBT, respectively. To put it in other words: Austrian students are not better nor worse than their American peers, a finding which is to be taken seriously at least from all who are engaged in economic education.

If we look at the results in more detail we remark that the Austrian group with the worst value is in the Dual Vocational System. Their mean is about 3 points lower than the mean of the American high-school students "without economics". We think that we will have to watch carefully whether this result is stable when the number of persons included is growing. At the moment we have only the data from 64 students from this school type. Therefore it is perhaps too early to look at consequences which were to be drawn from this.

On the other side of the scale we find that the American students with economics are as successful on our instrument as the best subgroup of the Austrian students (i.e. No. 2; cf. Table 9a). That is very impressive because the Austrian students receive much more lessons with economics-related contents than their American peers. Admittedly they have a lot to learn in business, management, and law. But we had expected that they should perform significantly better on the WBT than their American equals in age did on the TEL. May be, the main reason is that they will be tought "pure" economics only in grade 13 (cf. Table 4a). After that they will probably perform significantly better than their American counterparts. In our first paper we had preliminary findings from three classes of grade 13. Their mean WBT-score for from A was 25.93 and for form B 28.80.

If comparing American students who had a course in Social Studies with the Austrian school type No. 1 students one looks at two groups who have in common that their first or, let's say, vocational interest - also in terms of curricula - is not economics nor business. Nevertheless they reach comparatively high scores on our instruments. We think that one should not exclude that students grasp the ideas of economics, the concepts of MCG, better if they are taught rather in the context of politics than in the con-

text of business and management problems. Perhaps it is more motivating to think about economics problems as problems with some latitude for moulding by politicians - in other words: to look at economics through the eyes of a citizen with his whishes, demands, and claims. On the other side of this view stands the supposition that in the context of vocational training the students can't see where it is possible to influence or to use circumstances which we describe with economics concepts. If it is true that it is more motivating to think in acts, at least in virtual acts, then it might be plausible that students are more successful in thinking of themselves acting "on economics" as politicians than as single subjects in firms, e.g. as managers.

These considerations would also match on our results for the Austrian Senior Vocational Schools. Students attend them not only with the aim to be vocationally trained but also to get the allowance to enter university. It is in this case not unlikely that they draw their motivation for learning economics from the latter perspective, namely thinking as a critical citizen.

Going back to our data we found last but not least another similarity between the TEL-data and the WBT-data. As you can easily see on Table 9b our girls perform also not as well as the boys do on the test. This result is compatible with our everyday experiences but is from our point of view not at all acceptable. As Marianne A. Ferber (1990) states economics is infected with male-specific concepts, pictures, and examples. And it should be possible to change things towards more gender balance. The same may be true for an access to economics from the side of social studies. At least in Europe we are used to talk about politics in terms of acting men rather than women. And most young girls cannot imagine to be themselves the acting subject in politics.

On the other hand looking at the U.S. data it seems that the differences within the gender groups are larger than between. Therefore whether one deplores or neglects the gender differences our common main problem is to raise the level of economic literacy. We are not very hopefully with regard to a quick reaching of this aim. Yet we are not only hopefully but sure that we can present soon more and more detailed data and information on the empirical facts concerning the state of economic literacy in our countries.

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Table 1a:
School Structure: Austria

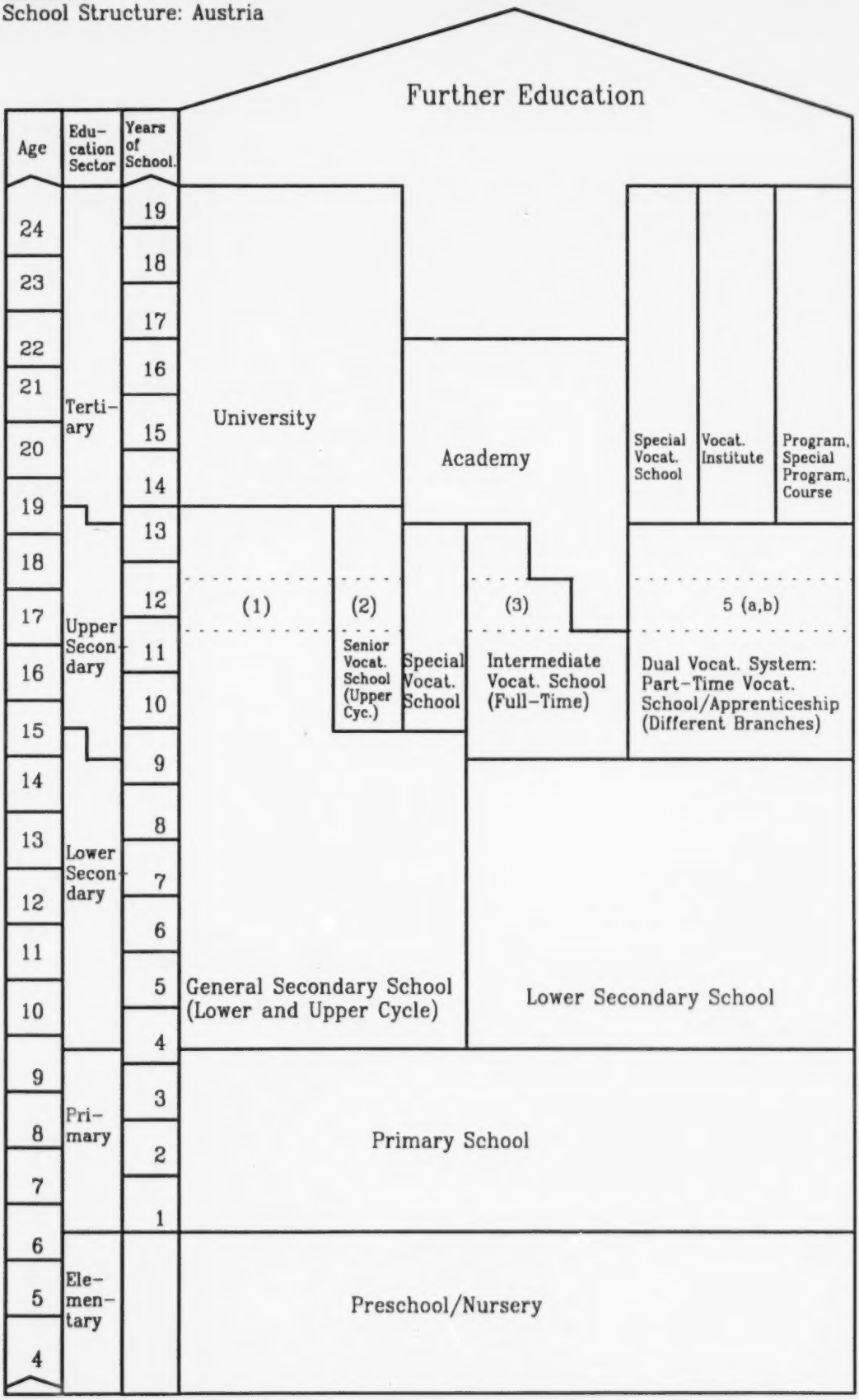

Table 1b:
School Structure: Germany

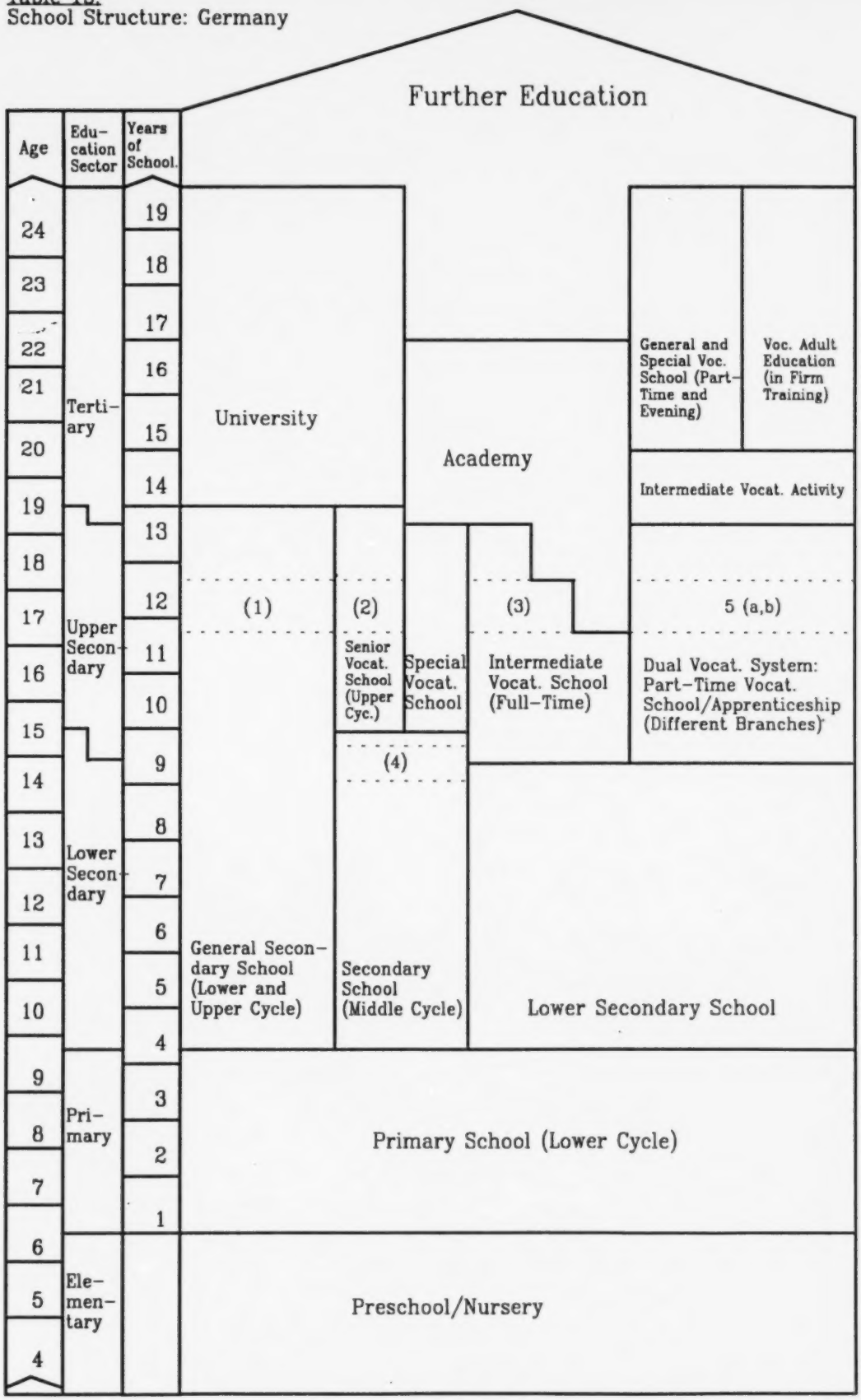

Table 1c:
School Structure: USA

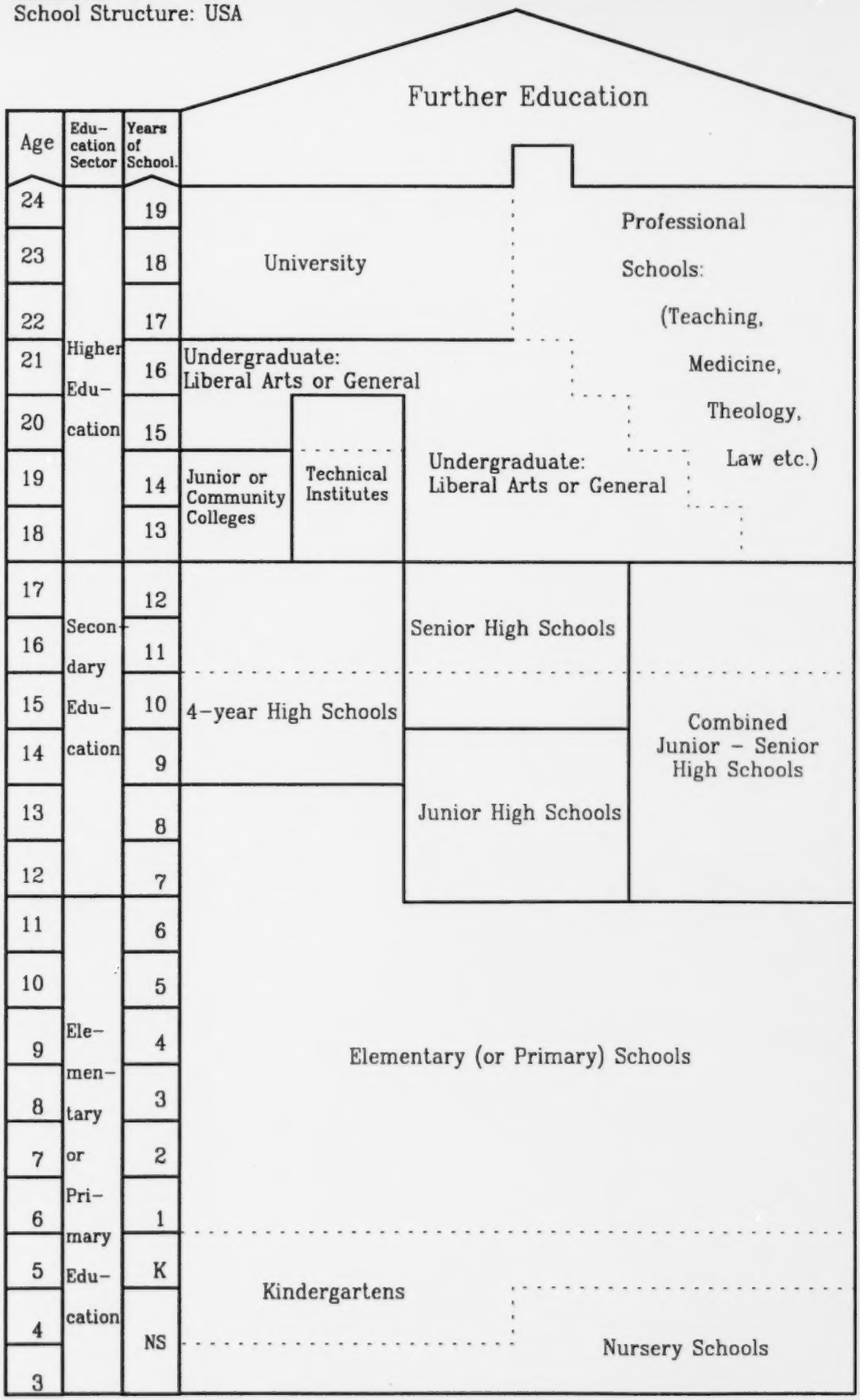

Table 2: School Types: Short Descriptions (Austria and Germany)

The WBT was administered in the following schools:

No.	Short Name	Designation	Description
1	GGS	General Secondary School	Schools of general education (not vocational) which provide the possibility of attending university.
2	SVS	Senior Vocational School	Schools of general and vocational education permitting entrance to university as well as to business (with a degree). The vocational qualification is in Austria higher than in Germany.
3	IVS	Intermediate Vocational School	School of vocational education providing a middling training for a career in business (no entrance to university).
4	SSG	Secondary School (Germany only)	School of general education (not vocational) providing a middling degree for entrance to secondary higher education institutions.
5	DVS	Dual Vocational System	School of vocational education for apprentices offering a one-or-two-days trainig per week ("theoretical background" for the "practical" work in the firm for the rest of the week).
5a	DVS/R	-/Retail (commercial depts.)	Different branches (agricultural, house keeping,
5b	DVS/I	-/Industry (commercial depts.)	crafts, commercial)

Table 3: Percentages of an Age-Group Attending the Different School Types

	School Type 1 Gen.Sec.Sch.	2 Sec.Voc.Sch.	3 Int.Voc.Sch.	5 Dual Voc. Syst.	thereunder commercial	others
Austria	15,2	3,8	5,8	49,4	23,7	25,8
					thereunder commercial	
Germany	27,3	2,0	10,3	30,7	10,3	29,7

Table 4a: Economic Knowledge related subjects with hours of instruction per week: AUSTRIA

Subject	Type of School: 1 Gen. Voc. Sch.				2 Sen.Voc.Sch.					3 Int. Voc. Sch.			5a Dual Voc Syst/Ret			5b Dual Voc Syst/Ind		
Grades	9	10	11	12	9	10	11	12	13	9	10	11	10	11	12	10	11	12
1. History & Social Studies	2	2	2	2									-	1	1	-	1	1
2. History & Social Studies (Economic History)							2	2	2									
3. Geography & Economics	2	2	2	2									2	-	-	2	-	-
4. Geography & Economics (Economic Geography)					3	2	2	3	3									
5. Accounting & Economics + Mathematics					4+2	2	3	3	3	4+2	2	4	2	3	2	2	4	4
6. Business & Management					3	3	3	3	3	3	4	4	2	2	2	2	2	2
7. Special Business & Management (e. g. retail, industry)								3										
8. Economics									2			2						
Sum per grade	4	4	4	4	12	7	10	14	13	9	6	10	6	6	5	6	7	7
Sum total	16				56					25			17			20		
Rank	5.				1.					2.			4.			3.		

Table 4b: Economic Knowledge related subjects with hours of instruction per week: GERMANY

Subject	Grades	Type of School 1 Gen. Voc. Sch.			2 Sen. Voc. Sch.						3 Int. Voc. Sch.			4 Sec. Sch. (9)		5a Dual Voc Syst/Ret			5b Dual Voc Syst/Ind		
		8	9	10	8	9	10	11	12	13	9	10	11	9	10	10	11	12	10	11	12
1. Social Studies																2	2	1	1	1	1
2. Book keeping																2	-	-	2	-	-
3. Economic Maths											2	1	-			1	-	-	1	-	-
4. Accounting (partly with EDP)					-	2	2	3	-	-	4	3 +1	3 +2			-	2	2	-	3	3
5. Business, Economics, and Law		1	1	1	1	4	4	3	6	6				2	1	4	2	2	3	2	1
6. Business & Management											3	3	3								
7. Special Business & Management (e. g. retail, industry, organization)											-	2	1								
8. Economics											-	-	2								
Sum per grade		1	1	1	1	6	6	6	6	6	9	10	11	2	1	9	6	5	7	6	5
Sum total		3			31						30			3		20			18		
Rank		5./6.			1.						2.			5./6.		3.			4.		

Table 5: Analyis of Syllabus Plans of the Different School Types on the Basis of the 22 TEL/MCG-Concepts

Country	Austria						Germany					
School Type	0	1	2	3	5		1	2	3	4	5	
TEL/MCG-Concept	HS	GSS	SVS	IVS	DVS/R	DVS/I	GSS	SVS	IVS	SSG	DVS/R	DVS/I
1 Scarcity	(X)	X	(X)	(X)	(X)	(X)	X	X		X	(X)	(X)
2 Opp. cost/trade offs												
3 Productivity	X	X	(X)	(X)	X	X	X	(X)		(X)		
4 Economic systems	X	X	X	X				X	X	X	X	X
5 Ec. inst. & incentives	X	X	X	X				X	(X)		X	X
6 Exchange, money, interdep.	X	(X)	X	(X)			X	X		X		X
7 Markets & prices	X	X	X	X	X	X	X	X	X	X	(X)	X
8 Supply & demand	(X)	(X)	X	(X)		(X)	X	X	X	X	X	X
9 Compet. & market struct.	X	X	(X)	(X)	X	X		X	X	X	X	X
10 Income distribution	(X)	(X)	X	X			X	X		X	X	X
11 Market failures			X					X				
12 Role of Government	(X)	(X)	X	(X)			X	X	X	X	X	X
13 Gross national prod.	X	(X)	X	X				X	X	X		
14 Aggregate supply			(X)	(X)				X			X	X
15 Aggregate demand			(X)	(X)				X		X	X	X
16 Unemployment	X	(X)	(X)	(X)				X	(X)			
17 Inflation & deflation	X	(X)	X	X				(X)	X	X		
18 Monetary policy	(X)	(X)	X	(X)				X	X		X	X
19 Fiscal policy	(X)	X	X	(X)				X		X		
20 Comp. advant./trade barr.	(X)	X	(X)					X				
21 Bal. of payment/exch. rates	(X)	X	X	(X)		(X)		X	X	X		
22 Int. groth & stability	(X)	X	X	X				X				
Number of Matches with TEL/MCG	(18)	18	21	19	4	6	7	21	11	14	11	12
Rank (expected in WBT performance)	not appl	3.	1.	2.	5.	4.	6.	1.	4./5.	2.	4./5.	3.

Table 6:

Ratings of Austrian Teachers on WBT Items (N_A~37, N_B~25)

	Form A		Form B	
Item	Mean	Std.Dev.	Mean	Std.Dev.
1	1.9	.8	2.7	1.1
2	3.5	1.4	3.6	1.3
3	1.8	1.0	2.1	1.1
4	2.1	1.0	2.4	.8
5	2.9	1.3	3.1	1.1
6	1.8	.9	1.9	1.1
7	1.4	.6	1.6	.8
8	2.0	.9	2.2	1.0
9	1.5	.6	1.7	.8
10	2.6	1.1	2.1	.7
11	2.4	.9	2.1	.7
12	1.8	.9	2.2	.8
13	1.5	.7	1.5	.6
14	1.9	.8	2.0	.9
15	2.2	1.4	2.3	1.3
16	2.0	1.0	1.6	1.0
17	2.7	1.1	2.4	1.2
18	1.8	1.0	2.0	1.0
19	2.0	.8	2.0	.9
20	2.4	1.0	2.2	1.1
21	1.8	.6	1.8	.7
22	2.8	1.2	1.9	1.0
23	2.0	1.1	2.7	1.3
24	2.1	.9	2.0	1.2
25	1.1	2.1	2.1	1.2
26	1.7	1.0	1.6	.6
27	2.0	.8	2.2	1.0
28	2.1	1.1	2.3	.8
29	2.5	1.2	2.7	1.2
30	1.7	1.3	1.8	.9
31	1.8	1.0	1.8	1.1
32	1.8	.9	1.8	1.0
33	2.1	.9	1.5	.7
34	1.8	.9	1.8	.7
35	2.2	1.1	2.2	.9
36	1.8	1.1	2.1	.8
37	1.9	1.0	1.9	.8
38	2.0	1.0	2.2	1.0
39	2.1	1.1	2.3	.8
40	2.5	1.2	3.3	1.4
41	2.1	1.0	2.3	.8
42	1.7	.8	2.2	.8
43	2.1	1.0	2.1	.8
44	2.3	1.1	1.9	1.3
45	1.6	.9	1.7	.6
46	1.9	.8	2.1	.8
Average:	2.0	.4	2.1	.5

Note: (1 = very good, 5 = very bad, 3 = 'mean')

Table 7:

Comparative Aggregate Statistics for TEL and WBT (Austria only)

	A		B	
	TEL	WBT	TEL	WBT
Number of Students	4235	356	3970	338
Cronbach's Alpha	.87	.75	.88	.79
Mean	22.06	21.45	22.13	23.14
Std. Dev. of Mean	8.33	6.10	8.68	6.63
Std. Error of Measurement	3.06	3.05	3.04	3.03
Average Item-Total-Correlation	.32	.21	.34	.24

Table 8a:

Percentages of Correct Responses and Discrimination Power of WBT Form A

Item	Corrected Item-Total-Correlation (N=356)	Percent Correct 1 GSS (N=80)	2 SVS (N=128)	3 IVS (N=114)	5 DVS (N=34)
1	.16	57.5	67.2	66.7	55.9
2	.24	28.8	43.0	34.2	26.5
3	.07	8.8	9.4	20.2	11.8
4	.15	30.0	29.7	27.2	5.9
5	.22	25.0	28.9	21.9	14.7
6	.27	42.5	67.2	46.5	26.5
7	.18	95.0	88.3	85.1	73.5
8	.15	72.5	73.4	72.8	58.8
9	.23	66.3	94.5	88.6	41.2
10	.26	51.3	41.4	36.0	14.7
11	.28	73.8	82.8	62.3	50.0
12	.17	61.3	66.4	62.3	58.8
13	.26	58.8	68.0	56.1	47.1
14	.18	35.0	44.5	41.2	35.3
15	.19	53.8	40.6	42.1	20.6
16	.29	51.3	54.7	36.8	32.4
17	.12	37.5	46.9	40.4	26.5
18	.36	81.3	89.8	74.6	61.8
19	.34	61.3	72.7	61.4	41.2
20	.34	45.0	42.2	24.6	17.6
21	.27	46.3	59.4	48.2	23.5
22	.10	15.0	24.2	16.7	20.6
23	.24	31.3	38.3	16.7	20.6
24	.15	57.5	67.2	65.8	52.9
25	.04	1.3	7.8	7.9	17.6
26	.32	51.3	64.8	40.4	29.4
27	.24	41.3	42.2	43.9	29.4
28	.10	46.3	44.5	36.0	26.5
29	.34	71.3	52.3	51.8	26.5
30	.25	65.0	67.2	54.4	26.5
31	.23	50.0	43.0	25.4	23.5
32	.03	53.8	48.4	50.9	58.8
33	.04	28.8	22.7	24.6	35.3
34	.14	41.3	34.4	30.7	20.6
35	.03	27.5	36.7	33.3	50.0
36	.30	83.8	84.4	75.4	38.2
37	.27	60.0	62.5	47.4	35.3
38	.07	41.3	36.7	32.5	32.4
39	.23	40.0	53.1	41.2	26.5
40	.28	47.5	46.9	48.2	20.6
41	.26	36.3	41.4	33.3	17.6
42	.32	58.8	63.3	58.8	26.5
43	.16	30.0	23.4	21.9	29.4
44	.26	52.5	53.9	50.0	35.3
45	.36	58.8	60.9	52.6	41.2
46	.30	41.3	33.6	31.6	23.5

Table 8b:

Percentages of Correct Responses and Discrimination Power of WBT Form B

Item	Corrected Item-Total-Correlation (N=338)	Percent Correct 1 GSS (N=72)	2 SVS (N=131)	3 IVS (N=105)	5 DVS (N=30)
1	.10	19.4	35.1	42.9	26.7
2	.20	36.1	47.3	34.3	36.7
3	.09	15.3	26.7	21.0	6.7
4	.25	66.7	77.1	63.8	46.7
5	.18	23.6	20.6	26.7	20.0
6	.35	31.9	62.6	47.6	20.0
7	.15	86.1	84.0	81.9	86.7
8	.30	50.0	80.2	63.8	63.3
9	.26	52.8	94.7	82.9	63.3
10	.10	72.2	72.5	75.2	66.7
11	.33	63.9	80.2	62.9	36.7
12	.05	34.7	44.3	45.7	40.0
13	.20	69.4	74.8	62.9	63.3
14	.33	50.0	61.1	39.0	36.7
15	.30	84.7	80.9	78.1	53.3
16	.31	59.7	77.9	66.7	53.3
17	.19	29.2	45.8	52.4	40.0
18	.25	75.0	87.8	78.1	70.0
19	.37	62.5	69.5	58.1	23.3
20	.25	37.5	41.2	43.8	20.0
21	.29	55.6	52.7	50.5	30.0
22	.32	50.0	70.2	56.2	46.7
23	.26	45.8	47.3	34.3	20.0
24	.26	31.9	55.7	24.8	20.0
25	.08	18.1	25.2	17.1	26.7
26	.26	50.0	57.3	48.6	23.3
27	.29	59.7	80.2	62.9	36.7
28	.04	33.3	25.2	31.4	26.7
29	.36	76.4	71.8	62.9	13.3
30	.30	45.8	58.8	40.0	33.3
31	.28	65.3	74.8	57.1	43.3
32	.33	25.0	48.9	30.5	10.0
33	.31	75.0	74.8	78.1	33.3
34	.30	38.9	47.3	28.6	20.0
35	.03	26.4	32.1	31.4	33.3
36	.35	59.7	73.3	60.0	36.7
37	.32	58.3	61.1	49.5	20.0
38	.18	16.7	22.1	21.0	16.7
39	.09	30.6	35.9	42.9	43.3
40	.27	33.3	45.0	26.7	13.3
41	.26	51.4	43.5	34.3	16.7
42	.40	38.9	48.1	30.5	26.7
43	.22	29.2	36.6	26.7	30.0
44	.19	43.1	65.6	66.7	40.0
45	.28	50.0	54.2	49.5	20.0
46	.16	41.7	54.2	45.7	26.7

Table 9a: Comparisons of Means Between Students in the U.S. and Austria by School or Course Type

No. and Group of Students	Mean	Std.Dev.	N	hours of instr.	Rank matches MCG	emp. data
Form A						
Austria						
1 Gen. Sec. Sch.	22.14	5.2	80	5	3	2
2 Sen. Voc. Sch.	23.65	5.6	128	1	1	1
3 Int. Voc. Sch.	20.40	6.3	114	2	2	3
5 Dual Voc. Syst.	15.09	4.0	34	3/4	4/5	4/5
overall	21.45	6.1	356			
U.S. (by course type)*						
6 Economics	23.57	8.5	2.585			
7 Consumer Ec.	21.70	8.0	309			
8 Soc. Studies	22.85	8.7	259			
overall	23.33	8.4	3.153			
Form B						
Austria						
1 Gen. Sec. Sch.	21.71	6.6	72	5	3	3
2 Sen. Voc. Sch.	26.26	6.5	131	1	1	1
3 Int. Voc. Sch.	22.35	5.2	105	2	2	2
5 Dual Voc. Syst.	15.80	3.8	30	3/4	4/5	4/5
overall	23.14	6.6	338			
U.S. (by course type)*						
6 Economics	25.55	8.9	1.930			
7 Consumer Ec.	18.07	7.0	405			
8 Soc. Studies	22.14	7.6	430			
overall	23.92	8.9	2.765			

* Taken from Soper/Walstad 1987, 20-21

Table 9b: Comparisons of Means Between Students in the U.S. and Austria by Gender

WBT	Form A N	Form A Mean	Form A Std.Dev.	Form B N	Form B Mean	Form B Std.Dev.
Males	120	23.54	5.45	120	25.40	5.60
Females	212	20.20	6.20	197	21.74	6.89
TEL*						
Males (with E.)	1.516	23.97	8.83	1.371	24.78	9.33
Males (without)	453	18.84	7.19	579	18.33	7.19
Females (with E.)	1.412	22.68	7.95	1.376	23.11	8.26
Females (without)	475	18.12	6.14	614	17.78	6.07

* Taken from Soper/Walstad 1987, 20-21